these correlation factors. The absorber of laser beam and the emitter of heat flux for measuring the temperature response curve by an infrared detector are required in thermal diffusivity measurement of transparent materials. The validity of thin sintered platinum layers formed both sides of specimen was demonstrated by measuring thermal diffusivity of synthetic sapphire at temperature between 1173 and 1773 K. These techniques were found to work basically well at high temperatures. 7 figs., 6 refs. [H. O.]

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Gas Pressure Sintering of Si_3N_4 with an Oxide Addition Eiji TANI, Mitsuhiko NISHIJIMA*, Hiromichi ICHINOSE**, Kazushi KISHI and Seiki UMEBAYASHI, *Yogyo-Kyokai-Shi*, **94**, 300-05 (1986)——Si_3N_4 with Al_2O_3, Y_2O_3, La_2O_3, CeO_2 or Sm_2O_3 was sintered at 1800° to 2000°C under nitrogen of 2 to 4 MPa.

The density of Si_3N_4 with Y_2O_3, La_2O_3 or CeO_2 increased with increasing amount of additives and increasing sintering temperatures. The density and flexural strength of Si_3N_4 sintered at 2000°C and MPa with 10 wt% CeO_2 addition were 3.23 g/cm^3 and about 520 MPa, respectively. 6 figs., 4 tables, 12 refs. [E. T.]

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Sintering Temperature Dependence on Impurities in SiC Ceramics Katsuhisa USAMI, Shizuo UEHARA, Atsuko SOETA and Kunihiro MAEDA, *Yogyo-Kyokai-Shi*, **94**, 306-08 (1986)——The amounts of impurities in hot-pressed SiC ceramics containing 2 wt% AlN or BeO were investigated as a function of sintering temperature. For AlN addition, almost all impurities in raw SiC material remained in the ceramics and their quantities were almost constant in the sintering temperature range of 1800°-2050°C. On the other hand, the behavior of

impurities for BeO addition was different from that for AlN addition. Namely, the quantities decreased above 1850°C and vigorously at around 1950°C. As a result, the quantities of most impurities in ceramics became less than 10 ppm at 2100°C at which the sintering is completed substantially. The residual impurities formed two kinds of phases in ceramics ; a Ti compound including V and a Fe compound including small amounts of Ti, V and Ni. 4 figs., 1 table, 6 refs.

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Preparation of Sialon Powder from Kaolinite (Part 2) Sinterability of Sialon Powder Hideyuki YOSHIMATSU, Hisashi MIHASHI and Tatsumi YABUKI, *Yogyo-Kyokai-Shi*, **94**, 309-11 (1986)——Sinterability of a sialon powder prepared from kaolinite and carbon has been studied. The compact of the sialon powder of 93 % conversion sintered densely on heating for 1 h at 1700°C under 1 atm N_2. The bulk density was 3.15 g/cm^3. The sintered sialon was mostly composed of β-sialon. The sialon powder of 98 % convension did not sinter densely. The sialon powder prepared from kaolinite and carbon was more sinterable than the mixture of Si_3N_4, AlN and Al_2O_3. 3 figs., 1 table, 8 refs.

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Fabrication of Grain-Oriented $Bi_4Ti_3O_{12}$ Ceramics by Normal Sintering (Part 2) Sintering Mechanisms Hirokazu CHAZONO, Toshio KIMURA and Takashi YAMAGUCHI, *Yogyo-Kyokai-Shi*, **94**, 324-29 (1986)——The sintering mechanism of the compacts formed by tapecasting a plate-like $Bi_4Ti_3O_{12}$ powder was studied by densification measurement and microstructure observation. The sintering behavior is characterized as follows : the dominant mechanism responsible for densification is particle rearrangement,